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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,256	08/29/2003	Martin Gropl	36088	1972

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EXAMINER

HOANG, ANN THI

ART UNIT	PAPER NUMBER
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2836

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/652,256	GROPL, MARTIN	
	Examiner	Art Unit	
	Ann T. Hoang	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) * | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/19/03, 3/1/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figures 5a and 5b should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wingerath (US 5,003,588) in view of Nutz et al. (US 4,737,671) and Hurd (US 3,571,608).

Regarding claim 1, Wingerath discloses an integrated circuit for an on-wire communication system that would necessarily comprise several communication connections at the terminals shown in Figs. 1-2 for connecting external electrical signal lines (TL1-TL_n), wherein an input/output circuit (SLIC1-SLIC_n) for inputting and/or

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outputting communication signals from or to signal lines (TL1-TL_n) is associated with each communication connection; wherein one of several thyristors (TS) is associated with each communication connection, in order to reduce any overvoltage which occurs at any one of the communication connections by a current flow through the associated thyristor (TS); wherein a control electrode of each thyristor (TS) is connected to a control circuit (TH, D3). The reference does not disclose the control circuit (TH, D3) to detect a current flow through the thyristor (TS) or de-energize that input/output circuit (SLIC1-SLIC_n) which is associated with that communication connection with which the thyristor (TS) is associated.

However, Nutz et al. discloses a circuit for detecting a current flow through a triac (Tr) through its gate voltage (u_{gate}). See Fig. 2 and abstract. Hurd discloses a circuit for de-energizing a protected circuit in the event of overvoltage detection. See Fig. 1 and column 1, lines 49-53. Since the triac (Tr) of Nutz et al. merely acts as a bidirectional combination of two thyristors sharing the same gate connection, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the control circuit of Wingerath with the circuits of Nutz et al. and Hurd in order to form a combined control circuit which checks for current flow through the thyristor via connection to its control electrode and de-energizes the input/output circuit in the event of a current flowing through the thyristor, which indicates an overvoltage event. This would provide extra protection for the input/output circuit, since, in addition to the thyristor shunting overvoltages, the input/output circuit would be turned off as well to ensure that it would not be damaged in the event of an overvoltage.

Regarding claim 2, Wingerath discloses that the cathode of each thyristor (TS) is connected to a communication connection through diodes (D1, D2), and that the anode of this thyristor (TS) is connected to a supply potential, in this case, ground, of the integrated circuit. Although the cathode of each thyristor (TS) is connected to a communication connection through diodes (D1, D2), it is not directly coupled to its respective communication connection. Diodes (D1, D2) serve to decouple the pair of conductors of the subscriber line (TL). See Fig. 1 and column 2, 37-41. However, in the case of the subscriber line (TL) consisting of a single conductor, decoupling diodes (D1, D2) would not be needed because there would be no need to prevent line-to-line signal flow, and would therefore be omitted. It would have been obvious to one of ordinary skill in the art at the time of the invention to couple the cathode of each thyristor (TS) directly to its respective communication connection in the case of the subscriber line consisting only of a single conductor, as decoupling diodes would not be needed.

Regarding claim 3, Wingerath discloses that the cathode of each thyristor (TS) is connected to the anodes of several diodes (D1, D2), and that the cathodes of these diodes (D1, D2) are connected to various communicating connections of signal lines (TL1-TL_n) so as to reduce, by means of said thyristors (TS), overvoltages which occur at these communication connections. See Fig. 1.

Regarding claim 6, Nutz et al. discloses the circuit for detecting a current flow through a triac (Tr) through its gate voltage (u_{gate}) to be an inverter circuit (R1, T1-T5), whose input is connected to the control electrode of triac (Tr). See Fig. 2; column 2, lines 49-53 and column 6, lines 12-16. Digital output information as a function of the

detected gate voltage (u_{gate}) of triac (Tr) is produced to indicate whether or not a current is flowing in the triac.

Regarding claim 7, Wingerath discloses that each of the communication connections of signal lines (TL1-TL_n) is associated with precisely one of several communication channels of the integrated circuit, and that each of the thyristors (TS) is associated with precisely one of the communication channels. The communication channels are represented by the separate signal lines (TL1-TL_n) and their associated input/output circuits (SLIC1-SLIC_n). See Fig. 1.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wingerath (US 5,003,588) in view of Nutz et al. (US 4,737,671) and Hurd (US 3,571,608) as applied to claim 1 above, and further in view of Knigge et al. (US 2003/0112575).

Wingerath does not disclose at least one the thyristors (TS) to be a multiple thyristor comprising several cathodes or several anodes.

However, it is common and well known in the art to use triacs as well as thyristors as overvoltage protection devices, as Knigge et al. discloses on page 2, paragraph 12. Triacs are bidirectional devices comprising two thyristors connected in inverse-parallel with their gates connected. A triac could also be referred to as a multiple thyristor comprising two anodes. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a multiple thyristor, otherwise known as a triac, as an overvoltage protection device as taught by Knigge et al. in order to provide a bidirectional overvoltage protection device that can control current flow over both

halves of an alternating cycle. These anodes would be connected to various communication connections so as to reduce, by means of said multiple thyristor, overvoltages which occur at these communication connections.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wingerath (US 5,003,588) in view of Nutz et al. (US 4,737,671) and Hurd (US 3,571,608) as applied to claim 1 above, and further in view of Satoh et al. (US 4,695,916).

Wingerath does not disclose the thyristors (TS) to have a preferred value of threshold voltage.

However, Satoh et al. discloses a circuit for a communication signal line with a bidirectional voltage limiting element 32 as an overvoltage protection device, wherein the breakdown voltage V_B of bidirectional voltage limiting element 32 is set to be slightly higher than the battery feed voltage V_{Bf} on the signal line. See abstract and Fig. 6. The operational voltage of bidirectional voltage limiting element 32 could not be higher than voltage V_{Bf} , therefore V_{Bf} appears to be the maximum operational voltage which is present at bidirectional voltage limiting element 32. Setting the breakdown voltage V_B to be slightly higher than the maximum operational voltage V_{Bf} would mean setting it to be less than 150% of V_{Bf} . It would have been obvious to one of ordinary skill in the art at the time of the invention to design the overvoltage protection device of Wingerath with a threshold voltage which is less than 150% of the maximum operational voltage, as taught by Satoh et al., in order to avoid an excessive surge current flowing through the overvoltage protection device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ann T. Hoang, whose telephone number is 571-272-2724. The examiner can normally be reached Mondays through Fridays, 8:00 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus, can be reached at 571-272-2058. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ATH



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